

# RECs: Innovative Products For Wind Power Markets

*Renewable energy certificates are gaining importance in the promotion of wind and other renewable energy development.*

BY CRAIG HANSON AND VINCE VAN SON

In September 2003, major U.S. corporations, including Alcoa, Cargill Dow LLC, Delphi Corp., DuPont, Interface, Johnson & Johnson, Kinko's, Pitney Bowes and Staples made history by completing the nation's largest aggregate corporate purchase of renewable energy certificates (RECs). Together, these members of the Green Power Market Development Group bought RECs from wind and other renewable energy facilities equivalent to more than 250,000 MWh per year. This amount represents the annual electricity consumption of 22,000 homes.

RECs are capturing the attention of other buyers as well, including retail electricity suppliers, universities and government agencies.

As a result, certificates are increasingly becoming an important, novel product for wind and other renewable energy generators. But what are they?

## What is an REC?

Wind and other renewable power generate more than just electricity. For each MWh of electricity from renewable energy facilities in the U.S., there is one less MWh of power

generated from conventional facilities, most of which burn fossil fuels. Renewable power plants reduce the emissions of carbon dioxide and many of the air pollutants that fossil-fired plants would have emitted. They therefore create two distinct "products":

- electricity and
- a set of environmental benefits relative to conventional power generation.

These environmental benefits can be packaged together into a product called a renewable energy certificate (REC). One REC represents the environmental attributes associated with one MWh of electricity from renewable resources. An REC also denotes the fuel source, the location of generation, the year of generation (also called vintage) and other non-electrical characteristics of a MWh from renewable resources.

RECs allow the environmental and other attributes of renewable power generation to be sold separately – that is, unbundled from electricity. In an REC transaction, a customer purchases certificates from an REC supplier (for example, a renewable generator, marketer or broker), but continues to buy electricity from its retail electricity provider. Certificates enable customers to support a wind power facility, for example, even if the buyers are located far from the project and not receiving electricity from it.

In a "green power" transaction, on the other hand, RECs and electricity are sold together (Figure 1). Customers purchase both electricity and RECs in one transaction from the same supplier, typically their retail electricity provider.

When RECs are sold separately, the electricity generated at the same time as the RECs is sold as commodity electricity (also called "generic" or "null" electricity), and no claims about this power being "green" or creating environmental benefits can be made. In other words, the "greeness" of renewable electricity resides with the RECs and not with the electricity. Only the REC purchaser can claim the environmental and other attributes associated with electricity from a renewable power facility.

## RECs benefit wind development

An REC is an innovative environmental and financial product that could help accelerate North American wind power market development by providing generators several benefits, including:

- Circumvent challenges of physical delivery. Physically delivering



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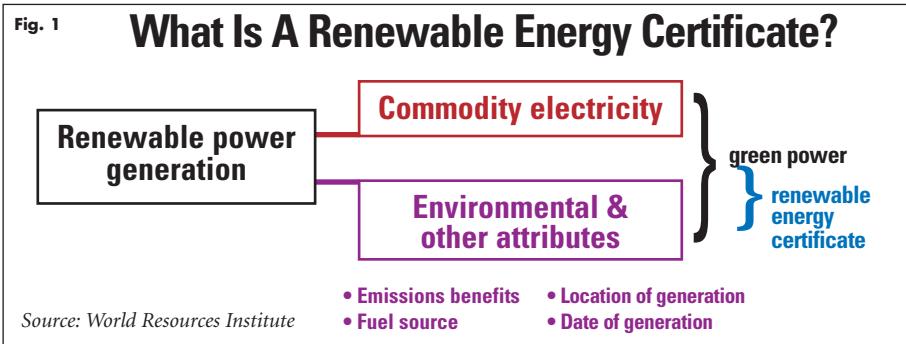
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wind power to end-use customers can be a challenging exercise. It entails scheduling transmission between the wind facility and the customer, shaping and firming the wind power to meet the end-user's load profile, and having retail suppliers separately include the green power costs on customers' bills. Each of these adds transactional complexity and cost to wind power.

RECs, on the other hand, avoid these physical delivery challenges and therefore reduce transaction costs. Generators need not worry about scheduling a transmission path to specific customers. The underlying electricity generated by a wind facility can be delivered to the regional grid when and where it is most cost-effective, without needing to match end-user load profiles. Wind generators do not have to engage retail electricity suppliers to allocate costs to customer bills - wind generators or marketers can engage customers directly. In short, RECs provide a more efficient way for customers to support wind power and capture the value of wind's environmental attributes.

- Provide additional revenue stream. The recent development of RECs as a distinct product is allowing markets to emerge that can recognize and value the environmental and other non-electrical attributes of wind power. This market essentially provides wind facilities with an additional source of revenue that complements income from the sale of electricity.

Capturing this second revenue stream can be very important. Power



generation costs from wind are often greater than those from fossil fuels, and the sale of commodity electricity at wholesale market rates can be insufficient to make wind projects financially attractive. The additional revenue from selling RECs can often make up this difference and ensure long-term project viability.

Increase the number of potential customers. If the physical delivery of bundled electricity and RECs were the only means for generators to sell wind power, then the pool of potential buyers would be limited. Regions with the most abundant wind resources are often located far from population centers with customers interested in buying the attributes of wind generation. Delivering wind power to these end-customers would entail significant transmission costs.

RECs, however, can increase the number of potential customers for a wind generator. Since they are unbundled from the sale and delivery of electricity, RECs enable a facility in a particular region to access not only local customers but also customers in

distant regions. The Bonneville Environmental Foundation, for instance, sells RECs from wind projects in the Pacific Northwest to corporate, governmental and NGO customers in Colorado, Maine, New York and Virginia.

### Markets for wind RECs

Wind generators can currently sell RECs into two markets in the U.S. – the regulatory compliance market and the voluntary market.

- Regulatory compliance market. As of March, 2004, 15 U.S. states have implemented legislation establishing that a certain percent of the electricity delivered to a retail electricity provider's customers in the state must be produced from renewable resources. These targets are binding in the 12 states with a renewable portfolio standard (RPS). In Connecticut, Maine, Massachusetts and Texas, retail electricity suppliers can comply with the RPS by purchasing unbundled RECs from qualified renewable generators that are located in the state or that deliver electricity into the regional power pool.

Selling RECs to retail electricity providers in these states is emerging as an attractive market for wind power generators. REC sales in Texas, Massachusetts and New Jersey to meet RPS targets in 2003 were approximately 4.3 million MWh, a 13% increase over the previous year. Approximately 30% of these RECs were from wind facilities. As RPS targets increase and as unbundled RECs become eligible in more states, the compliance market for wind RECs will continue to grow.

## REC Sales Help Finance Project

Community Energy Inc. (CEI), a marketer and developer of local wind power projects, is using the sale of certificates to help finance new wind projects. For example, in 2003, the University of Pennsylvania signed a 10-year contract to purchase local wind renewable energy credits (RECs) equivalent to 40,000 MWh per year from CEI. This large, long-term REC purchase is leading to the development of at least 15 MW of new wind supply in Pennsylvania. Given the strong credit of the buyer, CEI can bank on the long-term income from the RECs to sufficiently complement the revenue stream from the facility's electricity on the wholesale market. This makes the project financially viable and, therefore, attractive to project investors. ■■■

•Voluntary market. Wind generators are also selling RECs to corporations, governments, households and other institutions that are not required to meet an RPS. This is the “voluntary market.” Buyers seek wind and other RECs in order to “green-up” their electricity supply, reduce the environmental impact of their activities and support the growing renewable energy market.

Buyers in any state can access the voluntary market and purchase certificates from a variety of sources. For instance, there are more than 20 retail REC marketers in the U.S. To avoid some transaction charges, some buyers purchase certificates from an REC wholesaler or broker. Alternatively, some seek to purchase directly from wind generators.

The retail voluntary market also is rapidly growing. Approximately 1.2 million MWh of Green-e certified RECs were sold in this market in 2003, which is more than a seven-fold increase over the previous year.

## Market Group Promotes Wind

Convened in 2000 by the World Resources Institute, the Green Power Market Development Group is a unique commercial and industrial partnership dedicated to building corporate markets for green power. The group is transforming energy markets to enable corporate buyers to diversify their energy portfolios and reduce their impact on climate change. The group seeks to develop 1,000 MW of new, cost-competitive green power by 2010. Group partners include: Alcoa Inc., Cargill Dow LLC, Delphi Corporation, The Dow Chemical Company, DuPont, General Motors, Kinko's, IBM, Interface, Johnson & Johnson, Pitney Bowes and Staples. Visit [www.thegreenpowergroup.org](http://www.thegreenpowergroup.org) for more information. 

The efficiencies that an REC provides are making this product increasingly attractive in both of these markets. In next month's issue we will focus on the voluntary certificate market from the corporate buyer's perspective. In particular, we will explore why large corporations are purchasing RECs, how they

evaluate certificate opportunities, and the implications for wind generators. 

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